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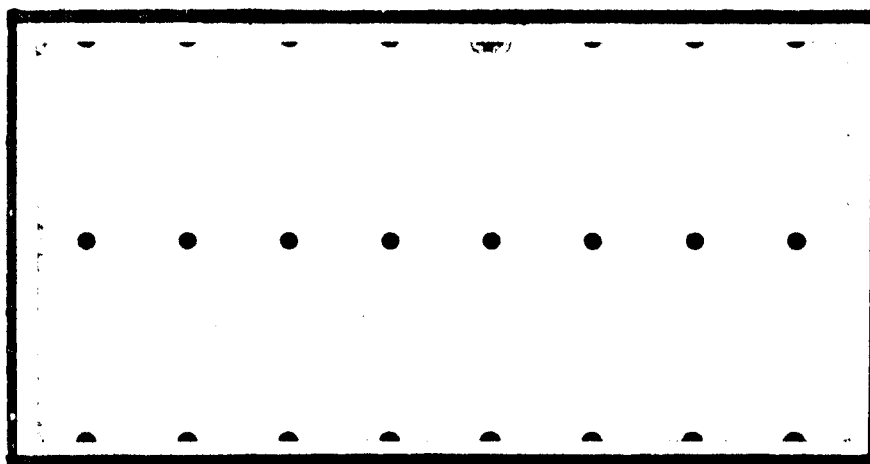
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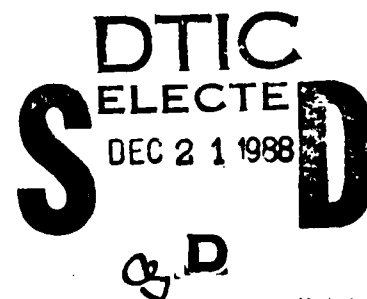
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DEVELOPMENT OF A USER'S GUIDE FOR THE
CIVIL ENGINEERING WORK INFORMATION
MANAGEMENT SYSTEM

THESIS

Thomas E. Lavery
Captain, USAF

AFIT/GEM/LSM/88S-10

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AFIT/GEM/LSM/88S-10

DEVELOPMENT OF A USER'S GUIDE FOR THE CIVIL ENGINEERING
WORK INFORMATION MANAGEMENT SYSTEM

THESIS

Presented to the Faculty of the School of Systems and

Logistics of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the

Requirements for the Degree of

Master of Science in Graduate Engineering Management

Thomas E. Lavery, B.S.

Captain, USAF

September 1988

Approved for public release; distribution unlimited

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I wish to thank my wife, Jane, and my two sons, Andy and Brian. They have taken the heaviest loss in terms of lost time, affection, and attention. In spite of that, they were my best and most loyal sustainers and encouragers.

Finally, I thank my Lord and God for providing me with the wisdom, insights, and perseverance I needed to complete this task. Those qualities were given when most needed without reserve.

Thomas E. Lavery

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Abstract

This study investigated the need for, and produced a
manager-oriented user's guide for the USAF Civil Engineering
Work Information Management System (WIMS) computer. This
guide is not meant to be a teaching device but is a
reference book which contains information to help a manager
better use the WIMS as a management tool.

The contents of this guide are directly related to the
WIMS functions which civil engineering managers needed or
wanted to use the most. A survey of those managers was made
to determine their desires for such a manual and what
specific data it should contain. A random sample of 24
managers from USAF major commands was completed and data
gathered from these and other expert WIMS users.

Once the data was gathered, the final step was to
compile the user's guide. The data was grouped and answers
and solutions to the problems presented by the sample group
were then formulated and tested. All major areas of
interest indicated by the sample group were answered and
several additional areas were added to clarify and help WIMS
users.

The final guide was tested and refined several times by
the author in conjunction with other WIMS users and experts.

A trial test was run to establish the usefulness of the guide with a small group of AFIT students.

The end result of the project was a successful, useful WIMS user's guide which contains specific topics and references for managers to help them better use the power of the WIMS computer system.

DEVELOPMENT OF A USER'S GUIDE FOR THE CIVIL ENGINEERING WORK INFORMATION MANAGEMENT SYSTEM

I. Introduction

Background

The role of Civil Engineering in the United States Air Force is composed of many tasks at many levels. The foundation of engineering is located at the base level where the actual work is performed. The world of Civil Engineering (CE) includes all aspects of facility design, construction, maintenance and repair, and, ultimately, facility replacement. CE also monitors real property, provides military family housing and fire protection services, monitors costs and budget needs, maintains administrative and personnel functions, maintains a readiness posture, and performs specific work studies (10:3). These separate tasks are all part of the Civil Engineering function and must be adequately managed.

The size of virtually all CE units in the Air Force dictates that information be controlled and managed by computer. The use of manual tracking systems is time consuming, inaccurate, and unresponsive. The Base Engineer Automated Management System (BEAMS) was one of the first computer systems used to help CE manage their business. It

was developed in the late 1960's and was updated over time to meet changing needs. It was a system designed to collect and store data, and could provide a limited number of standard reports for management use.

At the time of its inception, BEAMS was a great step forward. It allowed managers to better track projects, funds, materials, and man-hours by automating the manual tracking systems. However, this system was not very flexible. If a manager needed some unique information from the database, it was often very difficult and time consuming to obtain. The BEAMS was designed to provide reports of accumulated data; future projections or decision support were not available.

In the mid 1970s, it became evident that the BEAMS needed major changes. Studies were started to develop a new system to supersede the BEAMS with a more versatile management information system, a computer tool which would provide all the functions of the BEAMS (data gathering, storing, and processing) plus allow quick and easy access to information. The new system would provide improved decision making capability to the manager and was titled the Work Information Management System (WIMS) (20:17-18).

WIMS

> The objective of the Work Information Management
> System (WIMS) is to provide Air Force Civil
> Engineering at all levels with data automation
> tools and equipment that are easy to use,
> flexible, accessible, and operable by Civil
> Engineering personnel and responsive to management
> and mission requirements [10:3].

Several "tiger teams" of individuals from various

commands were used over a three year period to establish the

specific requirements for the new system (13). The

development teams studied the various needs which

engineering units had identified and included future needs

into the overall model for the new system. Part of the

overall statement of objectives was the need for a complete,

unified structure, not a collection of separate parts forced

to work together (6:7-8). The WIMS goal is to "Provide base

and command Civil Engineering managers with responsive,

flexible, automated tools so that information resources can

be tailored to match immediate and long-range requirements"

(6:16).

At present, Air Force Civil Engineering units are

phasing out the older BEAMS and adopting the Work

Information Management System (WIMS) (6:62-64), with

completion expected in 1989. According to General Ellis,

the Director of Engineering and Services, HQ USAF, "It's

going to change the way we do business. It will permit us

to be able to innovate, to both control and decentralize,

and to communicate" (11:7).

The Civil Engineering community has great hope for the WIMS. It has been systematically developed by our own knowledgeable users and offers the features CE managers need most. The older BEAMS was not very user-oriented and depended upon older technology. The WIMS is designed to be totally menu driven; no unique computer skills are needed to use the system (6:6). General Ellis said, "The systems are user-productive [Emphasis added]. That's better than user-friendly. The system draws you in [so] you can do whatever you need to make your job better" (11:7).

The WIMS system is very "friendly" and flexible. It allows users to modify existing reports and other programs. However, without frequent use, the advanced procedures of the WIMS can be difficult to remember. For example, managers may want to modify certain reports they receive (add or delete some data), or perhaps they need an entirely new report format. The WIMS can easily generate that new report (6:6; 7:3) but the process to build and encode that report is not a simple one. Once the manager has learned the file manipulations needed to produce a special report, and has gained some proficiency, the task is not complicated, but for the first few attempts or after a long absence from the WIMS these tasks can be time consuming.

The original WIMS refinement team stated, "The WIMS system can do just about anything. You are limited only by your imagination, creativity, and knowledge" (8:3). The

WANG VS-100, the mini-computer on which the WIMS operates, is a powerful machine which offers great flexibility to the WIMS system. But with all this power available, the user needs a reference he can use to quickly find some data or to perform a certain procedure or find how to do something correctly.

No user's guide or reference volume currently exists for the WIMS. Theoretically, the system is so "friendly" and easy to use that no books are needed for the user. The original design criteria required that the machine "Be self-documented using help screens"(10:2). Help screens do exist for almost every imaginable question, but they are not always easily found (7:2). The help screens may even confuse some individuals who are not very familiar with the system operation or definitions. Captain Donovan Coleman's research thesis showed that many users expressed a desire to have a handbook to help them bridge the gap between their own knowledge and the WIMS help screen system (4:112-113). This desire was also affirmed in an interview with Ed Fink from HQ Air Force Logistics Command Civil Engineering (13).

A user can become frustrated trying to locate a particular help screen. The help system is often several menus deep in a pyramid, or hierarchical structure. An illustration of a typical hierarchical system is depicted in Figure 1. It graphically shows the parallel branching common to the WIMS menu system.
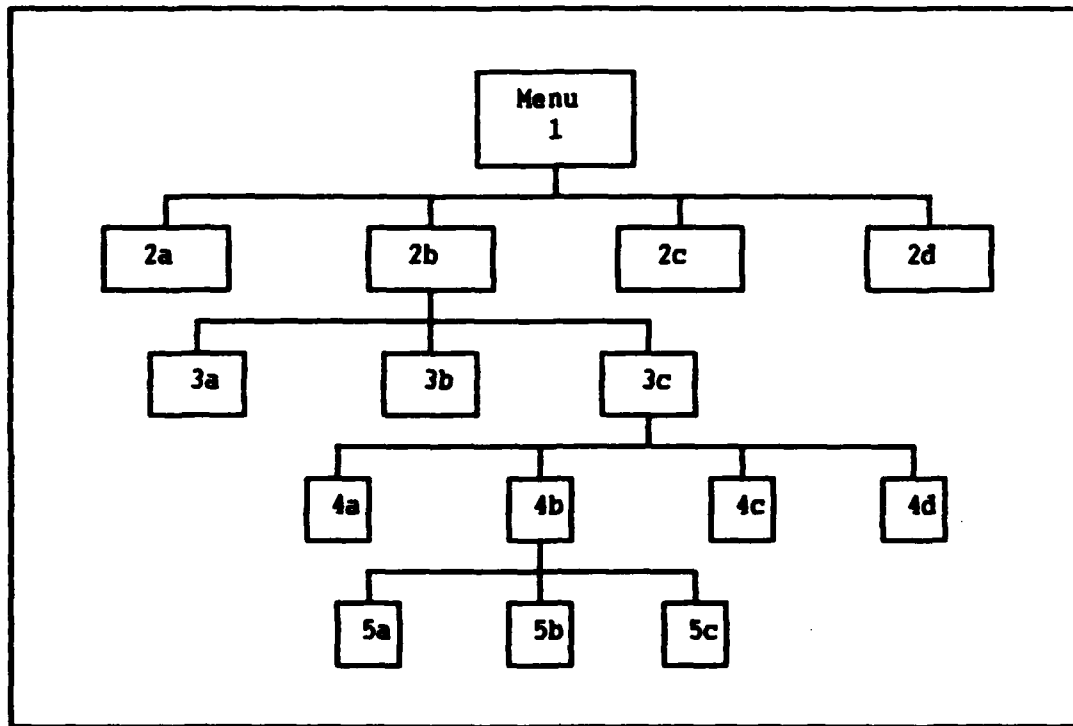
Figure 1:   Typical Hierarchical Structure

Note that it requires four steps to get from menu 4a to menu 2a.   The user sees only one menu at a time and the structure can confuse the novice and frustrate the experienced user.   Figure 2 illustrates a typical type of menu sequence which the user may encounter in the WIMS. This represents one partial branch in the hierarchy.   It displays how the menu hierarchy is followed down to the lower branch levels and also how it must be followed back up to escape from a particular function or area.   This can be very time consuming and can lead to errors.   In addition, on-line help screens do not work well for all individuals (28:175; 20:2-12).

```
Beginning        PF Key   Action
  Menu              1     Mail
                    2     Word Proc.
Select PF 3       » 3     WIMS      «
                  etc.    ---
```
Initial Screen

```
Next Menu        PF Key   Action
                    1     DE Report
                    2     Base CC Rpt
Select PF 3       » 3     DEM Report «
                  etc.    ---
```
WIMS Welcome Screen

```
Next Menu        PF Key   Action
                    1     DEM Report
                    2     DEMR Rpt
Select PF 3       » 3     Special Rpt«
                  etc.    ---
```
DEM Screen

```
Next Menu        PF Key   Action
                    1     Emergencies
                    2     J/O Rpt
                    3     W/O Rpt
                  etc.    ---
```
Special Job Order/ Work Order Screen
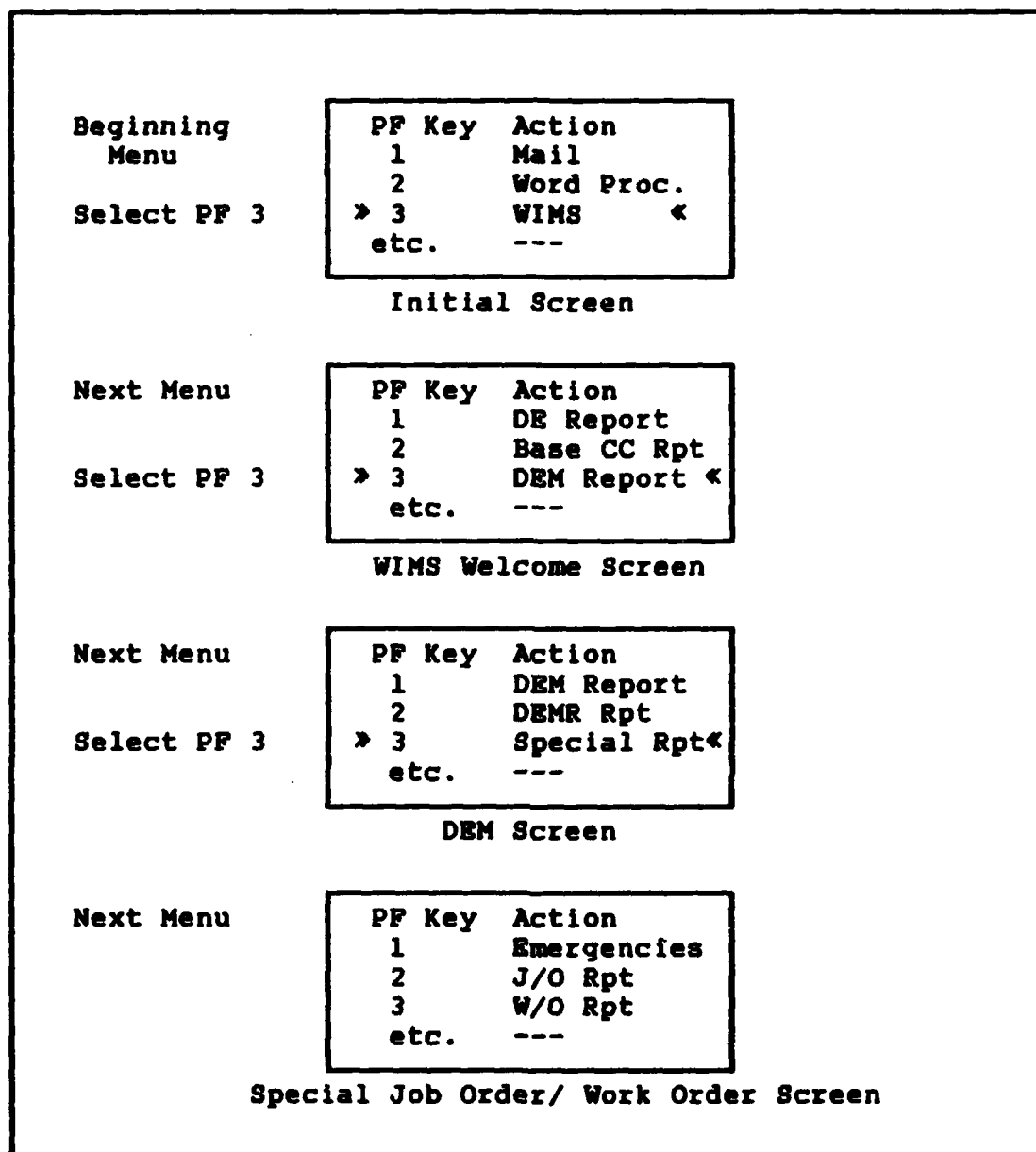
Figure 2: Typical Menu Screen Hierarchy

Some individuals have difficulty reading detailed
instructions on a video screen. Therefore, menus and screens
must be simple and direct.

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A good guide which explains some of the menu hierarchy and system operation could eliminate much of this confusion.

Problem Statement

No WIMS user's guide exists as ready reference to help solve problems the user may encounter. The guide should address common problems and explain general methods to solve these problems.

Research Objective

The objective of this research project is to create a WIMS guide suitable for use by all WIMS users, but directed at the manager level. This guide will contain a quick familiarization section similar to commercial manuals which rapidly acquaint the user with the capabilities of the system (22:1-20), and will also have tutorials for novice users and a reference section for the experienced user.

Research Questions

Two question areas must be answered prior to developing the guide.

Area 1: Existing Resources.

a. What manuals exist for the WIMS ?

b. Are any manuals readily available to WIMS users ?

c. Are any guides or manuals in development at AFIT/CE, AFESC/SIW, or elsewhere ?

d. Have any installations compiled local guides which could be expanded ?

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Area 2: Existing Shortfalls.

a. What kind of information is needed or desired in a WIMS guide ?

b. What common procedures should be included in this guide ?

c. What is the best format for this guide ?

Scope

The result of this effort will be to produce a desk reference for the CE manager who uses WIMS infrequently and needs some help to get started. It will not be written in technical computer language, but in language for the common WIMS user.

This guide will contain a quick user familiarization process and a reference section for the user to look up questions about specific procedures. The guide is not intended to provide detailed information on computer programming or computer languages but will have information on where to get further technical or programming help.

Applicability

The wide-spread use of the WIMS in the Air Force Civil Engineering community should give this user's guide broad use. It could be used wherever the WIMS is located. One of the benefits of the WIMS design in that users can change the environment or attributes of the system to suit their needs as often as necessary. The guide should be an active

document which is used, annotated, marked up, and modified at each base or site to the specific needs of the users (7:1). It will include an area for users to note their own site specific changes to the WIMS reports or programs.

II. Literature Review

Introduction

This chapter is a review of current literature about available WIMS manuals and about the process of writing computer user's manuals or guides. It has three parts: Part one discusses and evaluates currently available WANG and WIMS documents. Part Two reviews documents in reference to writing a user's manual. It will cover such broad areas as definition of a user, style and organization of a manual, and the actual contents of a manual. Part Three is an evaluation of many diverse user's manuals, comparing them and evaluating their individual strengths and weaknesses.

Available WANG References

Many technical manuals for the WANG VS-100 computer system are available. Most of these manuals are written from the system administrator's viewpoint and are required to operate and maintain the computer itself. However, these voluminous manuals are of limited use to the average user. There are also books, guides, and manuals available for certain peripheral functions of the WIMS. For example, the WANG Word Processing Quick Reference Guide (24) is a valuable aid for the word processing function, but is a specialized document for the word processor. Several more of these types of guides and reference cards are available for other WIMS peripheral functions such as BASIC language

programming and the optical scanning devices (25;26;27).
But no commercial documents were discovered which were
written specifically for the WIMS.

One reason for this lack of commercial documents for
the WIMS is that the WIMS is a special applications program
developed by U.S. Air Force Civil Engineering personnel and
is implemented on the WANG VS-100 computer. The WANG VS-100
is the actual computer upon which the WIMS system operates:
The WANG VS-100 is the hardware, WIMS is the software. The
word processing, basic language, and others programs are
standard applications which WANG Laboratories sells with the
hardware. They provide the standard commercial documents
and guides. This relationship between the WIMS and WANG is
depicted in Figure 3.

```
+-----------------------------------------------------------+
|                                                           |
|                    +-------------------+                  |
|                    |  WIMS         *   |                  |
|                    +-------------------+                  |
|                       |           |                       |
| +----------------+  +-----------------+  +--------------+  |
| | Optical Scanner|--|     VS-100      |--|Word Processor|  |
| +----------------+  |                 |  +--------------+  |
| +----------------+  |  MiniComputer   |  +--------------+  |
| |FORTRAN Compiler|--|                 |--|BASIC Compiler|  |
| +----------------+  +-----------------+  +--------------+  |
|                         |                                 |
|                    +-----------------+                    |
|                    | Electronic Mail |                    |
|                    +-----------------+                    |
|                                                           |
|              * Specialty Application Program              |
+-----------------------------------------------------------+
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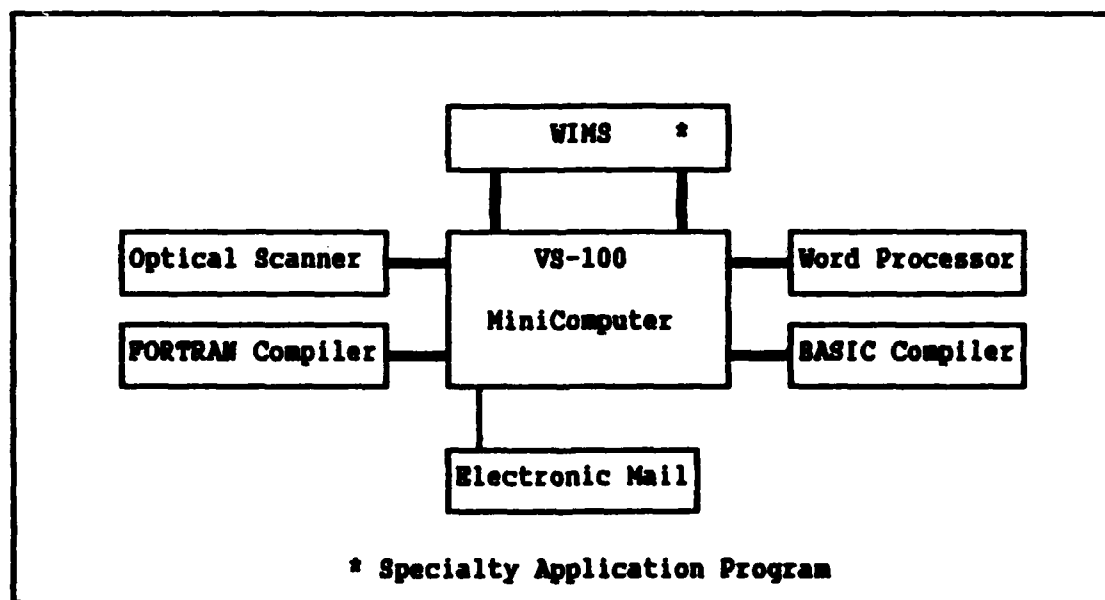
Figure 3: WIMS/WANG VS-100 Structure

The WIMS was intentionally brought on-line by the Air Force without user documents. Two of the original design requirements of the WIMS system were user friendliness and adaptability (7:18). The WIMS allows users to make changes and modifications to accommodate their individual needs and preferences. As these changes were made, any existing WIMS manual would rapidly become obsolete.

Development of manuals would have also delayed the implementation of the new system. The original design team decided that it was more important to get the system operating in the field for use, than to delay the entire project for the completion of guides and manuals. These types of guides and manuals could be compiled after the new system had been established. For these reasons, the Air Force decided not to include manuals in the initial WIMS implementation (5).

WIMS Documentation

Very few documents were found which directly addressed the WIMS functions. The best source was found on the WIMS computer itself. The "little z" library (which comes with the initial system installation and can be found in the WANG word processor) contains a list of documents written by both the original design team and WIMS users which may be of some help. In the little z library in the WIMS system at the School of Civil Engineering and Services(SOCES) at Wright-Patterson AFB, Ohio, there were 138 different documents

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available for review. These varied from System Manager Training documents, to a Model Base System Security Administrator Guide, and included draft information about several particular programs. Many of these documents were written by the Air Force Engineering and Services Center (AFESC) WIMS implementation team and came with the initial installation of the WIMS. They seem to be primarily for reference and in some cases are annotated that they are skeletons or outlines which must be filled out by the local administrator.

In the "little z" library, there are Draft Functional User's Guides for most civil engineering work centers including DEA, DEE, DEF, DEH, DEI, DEM, and DEO. These offer some information and explanation about the applications available to a specific work center and include the "four character root" (corresponding to the civil engineering four letter office symbol) which is part of the file naming convention for the WIMS. Some were more complete than others (DEF was by far the most extensive, but DEO was the most easily read and understood) but all appeared to be models meant to be modified and filled out at each base. Each has a different style, indicating that they were probably written by different individuals. Most of them list the file name, library, and volume reference for specific work center applications procedures (such as the Fire Department section). Others, such as DEE, give

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detailed information and instruction on peculiarities in their subsystem. There was not any guide for the DEU section.

WIMS information is also found in the course texts for AFIT SOCES MGT 003 (6), The ESIMS Administrators Course Student Handout (These handouts should be available from your local systems administrator. If not, you can obtain a copy from the School of Civil Engineering and Services at Wright-Patterson AFB, Ohio). They are a compilation of several of the "little z" files and other letters and documents from the original WIMS implementation team. The majority of information in these texts are pertinent for systems administrators. There were some references to the utilities section and capabilities of the WIMS which may have limited use for advanced system users. In a section titled "Useraids" many utility functions of the WIMS were listed by name with a very brief description of the particular function.

One document titled the SIMS User's Handbook (The SIMS is the Services computer system roughly equivalent to the WIMS) turned out to be a very broad overview of the SIMS computer system and what it would do for the Base Services (9). It discussed concepts, software components, and the operational of the SIMS. It was a good introduction to the SIMS for motivation purposes, but did not provide any detail on the functions or actual operations of the system.

In conclusion, no commercial user documentation was written for the WIMS and very little user oriented information from other sources was found.

Contents of User's Guides

In her book, How to Write Computer Documentation for Users, Susan Grimm clearly stated the benchmarks of a good users guide.

> Your job is to find out who will use the system and then write for those users. They must rely on the documentation so they can run their application systems. If the document is confusing or vague, users may give up in disgust or frustration [15:30].

Exactly what is a "User"? Mills and Dye define a user as the one who is expected to use the product (19:41). "I'll define a user as a person more concerned with the outcome of data processing than with the output. How the system works is less important than how to work the system to the advantage and benefit of the users"(24:4). A user wants an output product and doesn't really care how it occurred.

Phillipa Benson suggests a manual is commonly used by several different types of users (1:36). Everson classifies these users into three categories: The novice, the confident individual, and the bored expert (12:170). He offers an answer to the problem of writing for such a broad audience. Write manuals "First as a picture book for the anxious beginner, second as a straightforward adult book, and third, as a condensed brief reference book" (12:170).

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Jonathan Price suggests that we "Organize around the user's needs. Imagine and answer their questions"(21:29). It is very clear that whatever type of manual is prepared must be tailored and specifically targeted at the group of people who will be using that manual.

For this project, the mid-level Civil Engineering manager is the target. CE managers come from a broad range of computer backgrounds varying from highly skilled, competent users to complete neophytes (5). All of these individuals must be able to use the proposed WIMS user's manual.

Authors agreed that the final product must meet the needs of the audience, or they won't use it. "A user manual is - or should be - a tool that helps its readers get full benefit and advantage from the system"(28:4). The technical content of the document, and the physical organization of the document make it usable.

Technical Content

Technical content includes: Tutorials and References. Tutorials and references are very different types of manuals which contain separate categories of information and are written for different reasons.

Tutorial. A tutorial is a step-by-step guide for a particular activity. It teaches an individual how to do something in a "follow-me" pattern. It is meant for simple, initial learning of a task.

Price explains,

A tutorial gets people used to the program, gives
them confidence, shows them how things work, and
makes them ready to go forward on their own. [It
is] a motivational tool to encourage and embolden
timid users [21:54].

References. References are guides which help a more

experienced user to take general instructions (about a

particular function or concept) and apply them to specific

circumstances. It is a collection of information ordered so

that a semi-skilled user can easily and quickly find the

information needed. References are generally not read from

cover to cover but are only used as needed to find quick

explanations (15:41-42). They must be carefully organized,

carefully explained, and highly indexed or cross-referenced

to be effective.

Selection of Type. The selection of tutorial style or

reference style will depend on the audience. If the

audience is at the beginner or novice level then the

tutorial or training manual may be the best choice. It must

start with simple, understandable blocks of instruction and

proceed through a variety of learning areas. Once mastered,

these skills will become building blocks for development and

the student will outgrow the tutorial.

If an audience is composed of skilled users, then an

in-depth reference manual is more appropriate. These

skilled users already know how to do most things with the

computer. The reference will serve to help them with seldom

used or complicated tasks. The reference will not be outgrown, although it should make provision for additions and changes.

Combination Manuals

The manual for this project, like many commercially prepared manuals, will be a combination of both of these types. This method of organization will allow the manual to be highly flexible. It will serve both the novice and the expert. An example of a combination manual is the guide for the Supercalc3 spreadsheet (22). The first ten pages are a preface to the manual which contain a brief but complete "tour" through the system to give the user a quick familiarization with the product. The chapters of the manual are then separated into sections for the beginner or for the experienced user.

The first chapters of the Supercalc3 manual contain step by step explanations and easy to follow guides which instruct the new user what to do, what to expect, and what to do if something goes wrong. The latter sections provide a large selection of reference information and provide other ideas, applications, and advanced features for the more experienced individual. The user is able to select the portions of the manual which are relevant and need not waste time searching through trivial information. An extensive index is also provided so that the user can quickly find that information.

Document Style

Each of the documents selected for review favored different approaches to writing good users guides. Although the authors had different opinions on which styles of manuals were best, all of them agreed on two points:

1. Organize your information according to the way your user will need it or want it.

2. Begin with a summary of what you will cover.

Organization. Manuals can be physically organized by importance, need, difficulty, chronologically, analytically, by subject, or almost any other scheme as long as it meets the needs of the user. If the subjects or table of contents are arranged the way users look at and think about the computer, they will be able to use the manual easier and quicker (21:51).

Mr. Weiss recommends using a "structured approach" when organizing the manual. Structured analysis is formal, public, explicit, and rule-abiding. It is also top-down, which means it starts with the biggest picture possible and adds overlays of detail in successive stages (28:50). He also recommends using a modular approach, that is, build your manual as a series of parallel, and yet, independent blocks of information or instruction which are then integrated into one unit.

Contents. A complete manual should contain, as a minimum, a table of contents, a glossary, an index

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(preferably cross-referenced), and any required appendices such as an appendix which explains the meaning of error messages. Also, include what to do or where to go to find that information when those error messages appear (15:129).

Use. Finally, in your instructions, show the reader how to use your manual. Provide a "road map" for the reader to follow (14:104). If an experienced reader can skip sections, tell him. If there is a section devoted to teaching beginners, put it at the front and label it such. These kinds of details will make your manual worn from use and not a dust catcher on a shelf.

Format

Much research has been accomplished to discover how the format or appearance of the printed document helps or hinders the learning of the reader. The following suggestions are summarized from many sources (1; 12; 14; 15; 16; 19; 21; 28):

• Use 8 to 10 pitch for the text: It is most readable for the average user.

• Use bold face type, italics, and underlining to emphasize important points, but don't overdue it. Parts of text can be set apart for special effect.

• White Space (the portion of a page without print) is important. Overcrowding destroys readability and readers will tend to lose interest too quickly. To keep interest

and to help readers find important points, use icons or small illustrations to catch the eye.

 • Lines of text should not be too short or too long; 50-70 characters per line is optimum.

An important point is brought out by Weiss, "User documentation is not a form of literature"(28:6). User documents need to be easily read but need not be english works of art. Price highlights the fact that such manuals need not be written in a completely technical and mechanical style. Although humor is generally not suggested, he includes that allowing the writer's humanity to come out is allowable (21:155-156).

Price recommends the author describe what he sees, confesses his hunches and errors, and admits to being human. These insights will tend to draw the reader back into the manual and help the learning process.

Although the technology behind computer operations is complex, the writing style of the manual must not be. The Guidelines for Document Designers strongly suggested that active verbs be used wherever possible (16:27). This is especially true for any tutorial or instruction portion of a manual. Beginners may not understand the technical terms at first so don't use them until the terms have been introduced and explained. Keep sentences short and to the point. "The right style for manuals means using clear, simple words, active voice verbs, and effective punctuation" (15:75).

In summary, make the manual simple to use and self explanatory. Assume the reader needs some road maps and provide them. Use adequate illustrations, and answer the user's questions.

Review of Selected Manuals

To obtain a clear picture of how "good" user manuals are written and composed, an assortment of common computer software or device manuals were reviewed for content, readability, usefulness, and appearance. The titles may be found in Appendix A.

The technical content in these manuals varied from minimal to extensive. The Telephone Modem Instruction Manual by Capetronic Industries provided very bare instructions and assumed the user had extensive previous knowledge. In contrast, Getting Started With Quattro by Borland International, was very complete and provided instructions and information for all levels of users. The best manuals provided important information which led the novice user to that point systematically or allowed experienced users to find it immediately.

Readability. Several manuals were marginally readable, that is, they were designed and written in a very complex style which made comprehension of the material difficult. The Powerpack User's Guide by Russell Lenth was the worst of those reviewed. It appears to have been written as an afterthought to the program and the author assumes the

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reader understands the program already. A novice could not learn to use Powerpack from this manual. On the other hand, The ZX81 Basic Programming manual by Stephen Vickers, was very clear and simple to use. It provided detailed information for the novice but also included short cuts for the expert user. The writer's style was simple and informal and yet quickly conveyed needed information.

All of the reviewed manuals were of some use to the user, but some were clearly better. As previously mentioned, Getting Started With Quattro was one of the best. It provided a quick, hands-on tour of the system to rapidly acquaint the user with system capabilities, and it included many pictures of actual computer outputs so the user could compare results. The Word Processing Quick Reference Guide by Wang Corporation was written for the moderately experienced user and stated this in the beginning of the manual. It provided a good summary reference and also provided references to other manuals for further help as needed.

Appearance. The physical appearance of a manual is not strictly an esthetics issue. A good looking manual may be more pleasing to use, but often an unpleasant image is also an indication of poor layout design and meager content. The Capetronic manual, was cheap looking inside and out, and the layout made information sometimes difficult to find. The Commodore 64 User's Guide had good technical content which

was obscured by excessive use of boldface or colored type and by excessive highlighting and pictures. The Computer Companion for the Commodore 64 by Robert Haviland fully documented the functions and commands of that system but the use of "black" space to highlight pages detracted content.

Size. The sizes and physical styles of the manuals ranged from a small, 5 X 7 inch booklet to full size 8 X 10 inch spiral bound books. Personal preference may be a determining factor, but manuals which can be laid flat for study and which do not require the user to hold them open were most useful. Several of the least expensive looking manuals excelled in this area whereas the Quattro manual, which excelled in all other ratings, had to be hand held during use. Those with the most utility were the "desktop" size and could be laid flat for use or stood on end for storage.

Summary

In general, the best manuals had:

- Plenty of white space
    - Were easy to read
- Good headings or titles
    - Good, clear organization
- Illustrations of outputs
    - Good reference and examples

- Complete Table of Contents and Indexes

    - Quick and easy to find information

- Technical content attuned to reader

    - Advanced sections have advanced information

- References to other sources of information

    - Allow readers to find extra information

III. Methodology

Introduction

This chapter provides an explanation of how the need for the WIMS user's guide was verified, what information it should contain, and how it was tested and evaluated.

Need for the Handbook

Initially, several levels of WIMS users (novice, skilled, expert) were contacted to test the need for a WIMS guide. Positive comments were received about the value of such a manual from AFIT Graduate Engineering Management students who were familiar with WIMS and from faculty members at the AFIT School of Civil Engineering and Services (5). Ed Fink from HQ AFLC Engineering and Services expressed great interest in such a user's guide and agreed with the need for this manual (13).

Although these individuals' opinions provided a good indication of the manual's need, further justification was required. The few individuals contacted in this informal survey represented a biased group of WIMS users. The AFIT students for the most part did not have extensive experience on the WIMS and were accustomed to learning from books in a self study environment. They may have had a preference to learn from books and not from computer generated help screens. The faculty at the School of Engineering and Services were biased as a result of being in the academic

environment. Contacting other WIMS users would insure that the need was real.

A second informal survey was performed by interviewing several groups of WIMS users at Wright-Patterson AFB, Ohio. The first group was composed of several instructors at the AFIT School of Civil Engineering and Services who teach various WIMS related subjects. These instructors have varying degrees of experience with both the WIMS and with frequently encountered problems and provided good insights into some frequent WIMS problems. The second group was from the HQ AFLC Civil Engineering group. Ed King and other individuals of the original WIMS installation team for AFLC gave a broader perspective of problems they had seen at several AFLC bases (13).

An additional reason to contact other WIMS users was that these same people would help determine the kinds of information that the guide should contain. If people are expected to use a manual it should contain the answers to probable questions and give the information they need. A more complete understanding of what subjects or procedures this guide should contain could be found by contacting a larger number of active WIMS users.

Data Gathering

A formal survey of WIMS users was performed to gather opinions and data. The previously mentioned informal surveys were adequate to determine the preliminary need for the

user's guide. A more systematic survey was needed to insure that the desires of the average CE manager were found. The data was collected through personal interviews and structured telephone interviews. See Appendix B for a sample interview sheet. Individuals were encouraged to respond to the questions in an open manner and to provide experiences and insights which could benefit others.

Selection of Participants

To insure that a broad group was addressed, individuals at other bases where WIMS was installed and fully implemented were contacted by telephone and asked to participate in this research effort. Bases were first categorized according to the length of time the WIMS has actually been in use. They were divided into two groups, one group contained bases with six months or less on-line, and the other group contained bases with more than six months on-line. The bases which were actually selected were equally distributed between the groups.

To further insure an unbiased sample was obtained, bases included in the survey were grouped by major commands in proportion to the size of that command, i.e., the larger the command, the more bases from that command were included. Finally, the individuals to interview were randomly selected by office symbol, i.e., DEM, DEE, DEH, etc., to provide a good variety of opinions. The goal of this careful selection process was to have a set of random participants

who were stratified by: Length of WIMS on-line, Major Command, and Work Center or Office Symbol.

No simple method existed to determine how many interviews would be sufficient. The intent of this investigation was to explore the opinions and views of a diverse group, not to gather and analyze structured data for specific trends. Therefore traditional methods to determine sample sizes were not adequate.

The result of these interviews was to determine the need for a WIMS guide and to find out what topics users wanted in such a guide. Major James Holt, a faculty member at The Air Force Institute of Technology, School of Systems and Logistics, suggested that a random group of 10 to 15 people, varied in experience from novice to expert, from different organizations, would suffice. A decision to include 29 individuals was ultimately made to insure an equitable distribution by major command and work center was achieved in the interview group. The extra 14 individuals would provide additional information and would also be backups for the research process in case several selected individuals were not available or did not fully participate.

A matrix representation of the original bases and offices selected for interview is included in Appendix C.

Preparation of the User's Guide

The next phase of this project was to write the actual user's guide. The task required converting the ideas,

suggestions, and recommendations found in the survey stage into procedures, charts, lists, and other suitable format for a user's guide. This process would initially require an extensive investment of time with the WIMS computer as an in-depth familiarization process.

It was important to investigate different methods or avenues to solve certain types of problems. For example, to answer the question "How to find a file when you forget the name you used?", there are at least two methods to solve this dilemma. One method may be more suited for certain circumstances than another. These types of situations need to be logically discussed in all problem areas.

Evaluation of the User's Guide

The final phase of this project was to validate and refine the user's guide. A controlled experiment using AFIT Graduate Engineering Management students was used to test the guide's effectiveness and ease of use. The validation of the guide was performed by allowing a group of students who were familiar with the WIMS to use the guide during a routine lesson task. The students, who had varying degrees of competence with the WIMS, were asked to use the guide and to annotate any corrections or suggested additions. At the conclusion of the task, the students were asked to rate the guide on its usefulness.

Additionally, the guide would be distributed to other users, such as at the AFIT WIMS courses, HQ AFLC/DE, and to

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AFESC/SIW over an extended period, for comments and suggestions to help in the refinement of the final guide. This final step of testing, validation, and refinement would improve the overall quality and usefulness of the guide and make it a valuable tool for Air Force use world-wide.

IV. Results

This chapter details the actual results of the research plan. It is composed of three parts: Part one describes the questionnaire process and data collection, part two explains how the data was summarized, and part three describes how the users guide was written, tested, and modified.

Gathering the Data

Twenty-nine individuals were originally contacted and asked to participate in this project. These individuals are identified by office symbol in Appendix C and are listed by name in Appendix D. They were first mailed a copy of the questionnaire, then later contacted by telephone and directly questioned. The direct contact allowed greater discussion and more in-depth searching for WIMS user needs.

Data Summary

The task was to compile clear results of the answers from 24 different people who completed the series of open ended questions. During data analysis some areas of common interest were immediately evident. However, there was no simple method to aggregate the answers to the questionnaire. Responses were often very broad and covered several items of interest. For example, during questioning about WIMS usage, individuals would frequently mention problem areas and ask if an answer to these problems could be included. The free

form questionnaire process provided good results but made interpretation and analysis difficult.

All participants were helpful and understanding. Many went out of their way to provide additional insight and information. Several also brought other co-workers on the telephone to have a "WIMS conference". This cooperation and interest helped give more meaning and validity to the project and gave an immediate affirmation to the need for the guide.

Areas of Interest. Almost all participants agreed that a users guide was needed (only 1 of 24 disagreed). The other remaining responses were more difficult to categorize. A chart of the primary responses is contained in Figure 4. Note that each area does not contain 24 responses. Some participants did not address all areas. Respondents were not prompted during questioning to answer certain areas and this accounts for the apparent disparity.

Thirteen participants wanted to know more about the Utility functions contained in the WIMS/WANG system but two of them did not. Nine individuals indicated they wanted step by step instructions for certain areas while four individuals felt those instructions were unnecessary. Eight individuals asked for help with the Work Order/Job Order system.

Although only 8 of 24 respondents specifically requested help with the Report function, many participants

Results of WIMS Survey

24 Respondants

Legend:
- Required
- Not Requir

Categories (bottom to top):
- Access Rights
- Error Explanations
- Inquiry Function
- Graphics
- How to Escape
- 20/20 Sprdsheet Info
- List of Avail Pgms
- Training
- Making a Report
- Help with W/O, J/O
- Step-by-Step Guide
- Utility Description

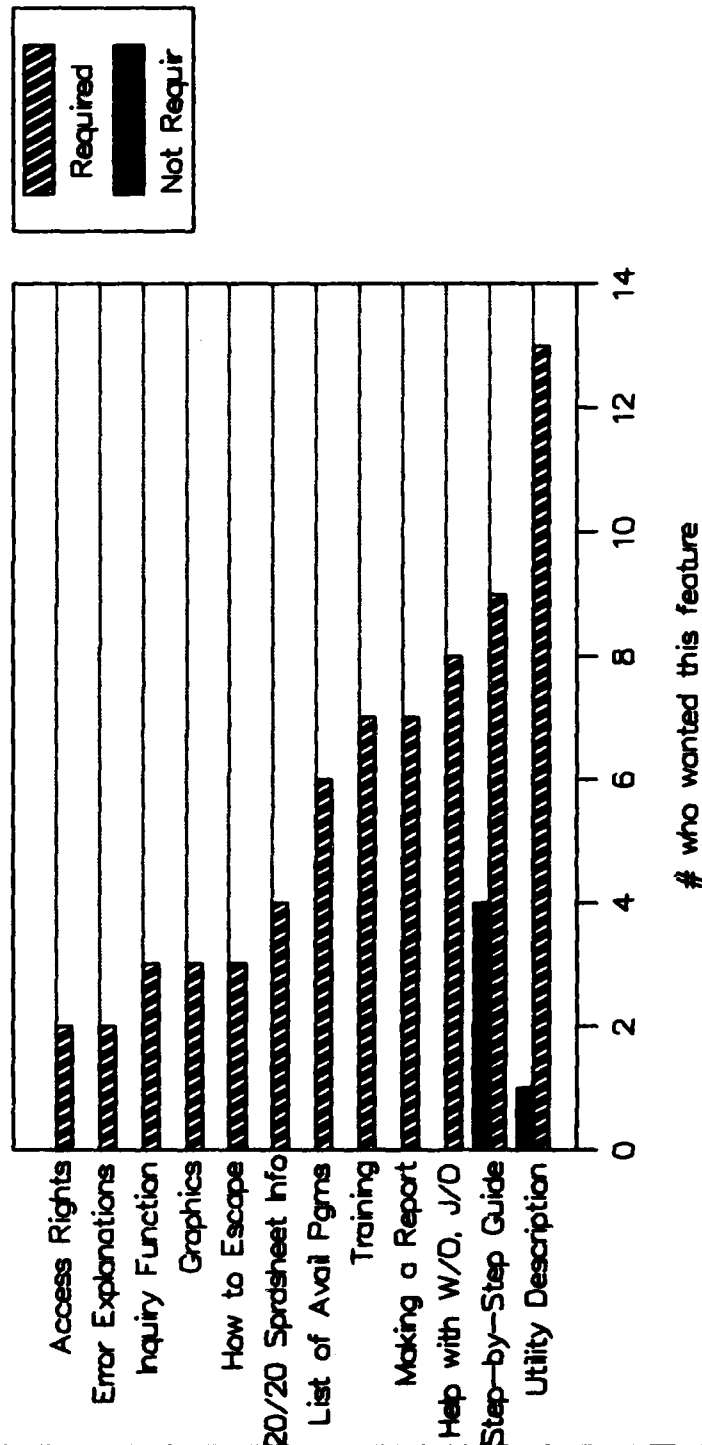X-axis: # who wanted this feature (0 to 14)

Figure 4: WIMS Survey Results

expressed interest in this area when queried. Many were
familiar with the process of producing special reports but
wanted some help, while others were frank and said they
didn't know how to do it and were hesitant to try. Six
individuals asked for a comprehensive list of what was
available on the WIMS. Other areas mentioned included help
with graphics, using the "Inquiry" function, and explanation
of errors commonly encountered.

Many of the Financial Management participants (DEU)
asked for help using the 20/20 Spreadsheet program on the
WANG computer. Spreadsheets are frequently used by financial
managers yet most bases had little information available on
their use.

Completion of the User's Guide

The actual development of the user's guide was an
iterative process. Initially, the main task was to answer
the requests and develop solutions to the problems which the
group of users felt were most important. This required
discovering at least one or more logical methods to solve
the problems presented or to provide simple explanations to
questions. The solutions were discovered largely through
trial-and-error, by trying different combinations of ideas,
and from other user's advice. For example, a key difficulty
which frequently occurred was getting stuck in the computer
and not knowing how to resolve that problem. It turned out
that in most cases users were not really "stuck", but were

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often either waiting for a long procedure to finish or they were not fully reading the screen instructions and were giving the computer improper instructions (which it then disregarded).

Several instructors at the AFIT School of Civil Engineering and Services at Wright-Patterson AFB were also helpful in offering suggestions and alternative solutions, most notably Capt Allan Poerner, the WIMS system administrator for AFIT/DE. These inputs from more seasoned users were of great help to discover better answers and solutions (5).

Finally, several areas of interest were added by the author to provide a fully equipped manual which would have a greater value to more WIMS users. These areas include the sections on getting started, using menus, and applications programs.

The guide answered all major areas addressed in Figure 4 except "Error Explanations". Although errors as a subject are not directly addressed, many answers to error situations or where to find additional information were included in the guide particularly in the "Help" and "Information" sections. The task of compiling a list of most error statements and how to correct them was too extensive and and inappropriate for this style of user's guide. This extensive information is already available from one or more of the extensive WANG VS-100 technical manuals.

After answering the requests from the user survey, the initial guide was compiled and tested for accuracy. The guide was used step by step on the WIMS. This initial test was critical because it clearly showed areas where important information or instructions were unclear or missing. For example, the guide included a tutorial on report generation. When initially tested, several mistakes and omissions were found which were corrected on the spot. Other areas were also corrected or adjusted to be more accurate, clear, and readable.

After the initial guide had been tested, other individuals were asked to read and test the guide to find any remaining problems. Although no major errors were found, several changes were made and new sections added to clarify such areas as programming languages, access rights, and utilities.

After each write-try-fix-test cycle new information areas were added. As changes were made, the guide was cycled several times until the final user's guide was completed. A copy of the WIMS User's Guide is contained in Appendix E.

Format

Note that the user's guide has been formatted for a 5 1/2 x 8 1/2 inch page binder size. This size seemed to work the best, provided good readability, and took up little desk space. The completed guide is bound in a D-ring binder

which lays completely flat for easy use. This size and
binder type helps to complete the original intent of the
manual. It is a desktop reference which is easily used.
The pages are easily removed and extra pages are provided
for notes and personalization. The style selected is that
of an informal yet friendly tutor which parallels the
friendly design of the WIMS itself.

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V. Conclusions and Recommendations

Introduction

This section provides an overview of the results of this research project, an analysis of the research's impact, recommendations for improving the final user's guide, and some final comments on peripheral information which was not specifically investigated but which was discovered and is significant in the overall WIMS user environment.

Project Overview

The desired end result of this research was to develop a WIMS user's guide to help the Civil Engineer manager do a better job by using the available power of the WIMS system. In that aspect, this research was successful. A user's guide was compiled and refined which provided answers and suggestions for most of the perplexing computer operation problems encountered by managers. The guide was compiled based on desires taken from field interviews with a representative sample of WIMS users. Other information was added at the discretion of the author and on the recommendation of other WIMS experts and expert users.

The WIMS User's Guide which was developed is really a "prototype model". It was the product of many interviews and many hours of computer work, however, it still needs additions and refinement. This guide is a complete unit, designed to be continuously modified, changed, and

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updated to fit the changing WIMS configurations and the changing needs of the WIMS users.

Research Impact

The availability of this guide will have far reaching consequences. Placed in the hands of novice WIMS users, the guide can teach them and help them become more adept at using the extensive capabilities of the computer to manage their work better. Placed in the hands of experienced users, the guide will help to reduce the frustration of forgetting certain procedures and allow that user to work more quickly and effectively with the WIMS. As a result, Civil Engineering managers will become more competent and will expand and experiment with the system seeking better ways to control valuable assets. The result will be managers who can use the total capabilities of the WIMS.

The guide book may inspire users to develop new management techniques which could be implemented on the WIMS. Once CE managers become more skilled at using the power of the computer, their creative talents may help to develop new management tools. These possibilities include such areas as decision support for managers, allowing "what-if" questions, and new programs for engineering and design work. Enhanced computer use could lead to the development of these kinds of tools.

Recommendations

1. Expand and refine the user's guide. The WIMS User's Guide needs further improvement. It is a good start but needs additional information added to the reference section on more functions which people need to use. New tutorials might also be added along with an expanded explanation of the file system and methods to move around the menu system quicker. This additional refinement should be performed as a long term project from an established office, possibly at HQ AFESC/SI or one of the MAJCOM WIMS offices.

2. Place this guide in the little z library in the WANG word processor. This way each base would have immediate access to it and users could make printed copies of it as needed. In addition, the guide could be quickly modified so that instructions were site specific (i.e., proper labeling of the PF keys could be made and local menus could be directly addressed). This would place a small burden of work on someone in the local system to keep the guide updated, however.

3. Use the guide as a part of the AFIT and local training programs. This would serve a two-fold purpose. It would provide information and tutorials after initial training which would lighten the local training load. It would also provide for continual updating of the guide. As changes were made, new trainees would discover changes and improvements to keep it current.

4. Add the guide for use to the AFIT SOCES for all courses which teach and use the WIMS. This would have two benefits. First, it would insure each person who attended these courses would have a copy for their use. Second, a broader range of inputs and suggestions for change would be used to update those manuals. This way, new ideas and uses would be effectively circulated among all CE units.

Recommendations for Further Research

Additional studies could be performed to determine and document the effect of this guide on the increased use of the WIMS by CE managers. These studies should include what types of creative tools these managers have developed and what additional procedures they would like to have in the WIMS but which were beyond their capabilities to design or implement.

Complaints

During the interviews for this research, many users expressed various shortcomings about the WIMS. Although these problems were beyond the scope of this research, the major complaints are detailed here.

Many users complained that the WIMS was too slow and took too long to perform most procedures. This problem is directly related to the complexity of the selected procedure and the number of other on-line users. The WIMS can only process so much information at a time. When the system is

crowded, the computer forms a waiting line of tasks to perform, and it will appear to take more time to complete tasks. This is an inherent problem with all network computers like the WIMS and cannot be simply solved.

Another complaint frequently mentioned was the problem of the WIMS being taken off-line by the system administrator for regular maintenance or daily backups during normal duty time. Apparently some administrators routinely shut off access to the WIMS late in the workday to take care of these routine matters rather than to schedule such tasks for after normal duty hours when most users would not be disturbed.

Another area discovered during the research interviews was system training. Although not specifically addressed by this project, many individuals commented that they desired additional or expanded training on the WIMS. This lack of complete training is the same problem that Coleman reported in his 1985 MS thesis (4:112). Seven individuals felt that less than adequate hands-on training was given with the initial installation of the WIMS system at their base. Other individuals asked for additional general training or specific training in their functional specialty.

These separate issues are well beyond the scope of this project but were a noticeable complaint among more than just a few users.

Insights

An interesting event occurred during this project. After performing extensive research and many hours of WIMS use, the author discovered he no longer needed the guide for help. This event affirms the intent of the guide which was to help the infrequent WIMS user. When managers begin to use the WIMS capabilities, they will also no longer need the guide as a tutorial but only as an occasional reference book. Perhaps after a year or longer of absence from the WIMS the author may need to refer to the guide again.

This occurrence also affirms the original intent of the WIMS concept - that it would be user friendly and use menu screens to help the user through the system. The user's guide supplies the initial impetus to help the manager get started: the WIMS will continue to help as the user becomes more skilled and adept.

One of the most rewarding aspects of the project was the support and interest that was evident in almost everyone who was questioned, sampled, or tested. Many new WIMS users were very enthusiastic and repeatedly requested copies of the completed guide. Many of the more seasoned users were equally enthusiastic and felt the guide would be a great addition to increase WIMS usage. Overall, this guide should be very well accepted and will directly help to increase the effectiveness of CE managers.

Appendix A: Selected Reference Manuals

Borland International. Getting Started With QUATTRO.
Borland International. Scotts Valley, CA. 1987.

Capetronic Industries. 1200 Telephone Modem Instruction
Manual. Capetronics Industries, 1983.

Department of the Air Force. Services Information
Management System (SIMS) User's Handbook. HQ AFESC, Tyndall
AFB, FL,1987.

Lenth, Russell V. PowerPack User's Guide. Russell V.
Lenth, Iowa City, IA. 1987.

Mason, Robert. A General Application Computer-Assisted
Instruction System for Microcomputers. MS Thesis, School of
Systems and Logistics, Air Force Institute of
Technology(AU), Wright-Patterson AFB OH, September 1987.

Sorcim Corporation. Handbook, 10 Minutes to Supercalc3.
Sorcim Corporation, San Jose CA, 1983.

Vickers, Steven. ZX81 BASIC Programming. Boston MA: Sinclair
Research Limited, 1981.

WANG Corporation. Word Processing Quick Reference Guide.
WANG Laboratories, Lowell, MA, 1983.

WANG Professional Computer Series. The Wang Professional
Computer User's Quick Reference Guide. WANG Laboratories,
Lowell, MA, 1985.

-----. The WANG Professional Computer DOS Command
Processor Quick Reference Guide. WANG Laboratories, Lowell,
MA, 1985.

-----. BASIC Language Quick Reference Guide. WANG
Laboratories, Lowell, MA, 1985.

Commodore Business Machines. Commodore 64 User's Guide.
Wayne, PA. 1982.

-----. VIC-1541 Single Floppy Drive User's Manual. Wayne,
PA. 1982.

Haviland, Robert P. Computer Companion for the Commodore
64. TAB Books Inc, Blue Ridge Summit, PA. 1984.

Appendix B: Interview Sheet

These questions will be used in telephone interviews with WIMS users. They are not exhaustive nor are they the only questions to be asked. They are a guide for the interview and will be used to generate more in-depth answers. These interviews will be recorded if permitted. Otherwise manual transcription of the answers will be made.

1. What position do you hold in your organization ?

2. How long have you been in that job?

3. How long have you been in the USAF (Civil Service for civilian employees) ?

4. What computer experience have you had ?

5. Do you use the WIMS in your job ?

6. What functions of the WIMS do you use most ?

7. What functions would you like to have on the WIMS ?

8. If you don't use WIMS, Why not ?

9. Do you have any manuals, guides or documents for WIMS help ?
   If so what are they ? (Notes, cards, etc)

10. Do you feel a user's guide or manual would help you or others to use the WIMS more effectively ?

10a. What would you like on a printed card to help you ? (Names of major files, programs, How to. .)

10b. Do you need or use a written 1-2-3 style menu to accomplish a certain task ?

10c. Would you find a description of the various utilities useful or helpful ?

11. What problems have you had with the WIMS ?

12. What have you always wanted to do with WIMS but never figured out how to do ?

13. What thing annoys you most about the WIMS ?

14. What do you frequently forget about the WIMS that you need to remember?

15. What should this guide contain ?

Appendix C: Matrix of Selected Participant Bases

Base	MAJCOM	Date On-Line	DE	DEE	DEF	DEH	DEI	DEM	DEMR	DEU
Barksdale	SAC	11/87		X					X	
Castle		10/87								
Griffiss		7/87				X			X	
Offutt	*	12/86								
Whiteman		4/87					X	X		X
Bergstrom	TAC	6/87								
Langley		12/87		X		X				X
Moody		4/87		X						
Shaw	*	10/86								X
Tyndall		7/87								
Altus	MAC	11/87						X		
Hurlburt		2/88			X		X	X		
Norton		5/87								
Scott	*	2/87		X						
Chanute	ATC	10/87							X	
Goodfellow		9/87						X		
Keesler	*	3/87					X		X	
Eglin	AFSC	12/87				X				
Hanscom	*	3/87								
Newark	AFLC	9/87						X	X	
Tinker		2/87					X	X	X	
Wright-Patt		1/87					X			
Eilson	* AAC	5/87	X							

*   Indicates Operational Lead-In Base

Appendix D: <u>Interview Participants</u>

Capt Baufman	834th CES/DEM, Hurlburt Field FL
Mr Bailey	834th CES/DEI, Hurlburt Field FL
MSgt Neubold	834th CES/DEF, Hurlburt Field FL
Capt Bucnic	351st CES/DEI, Whiteman AFB MT
Capt Merrill	351st CES/DEM, Whiteman AFB MT
Ms Hilton	351st CES/DEU, Whiteman AFB MT
Ms Cason	363rd CES/DEU, Shaw AFB SC
Mr Everett	375th CES/DEE, Scott AFB IL
Mr Whited	3202nd CES/DEH, Eglin AFB FL
Mr Waguespack	2nd CSG/DEMR, Barksdale AFB LA
Mr Knee	2nd CSG/DEE, Barksdale AFB LA
Chief Bowen	1 CSG/DEF, Langley AFB VA
Mr Torres	1 CSG/DEU, Langley AFB VA
Lt Col Griffith	443rd ABG/DEM, Altus AFB OK
Capt Szabo	3480th ABG/DEM, Goodfellow AFB TX
Chief Walsh	347th TFW/DEF, Moody AFB GA
Mr Chiniche	3380th ABG/DEI, Keesler AFB MS
Capt Bariuan	3380th ABG/DEMR, Keesler AFB MS
Mr Barcus	2803rd ABG/DEM, Newark AFB OH
Mr Hembre	2803rd ABG/DEM, Newark AFB OH
Mr Stewart	2854th CES/DEI, Tinker AFB OK
Major Cooks	2854th CES/DEI, Tinker AFB OK
Capt Rottler	2854th CES/DEI, Tinker AFB OK
Capt Poerner	AFIT SOCES, Wright-Patterson AFB OH

Appendix E: WIMS User's Guide

This appendix contains the actual user's guide which was written and compiled. It was formatted for a 5 1/2 x 8 1/2 inch page and was placed into a D-ring binder for actual use. For this appendix the guide has been printed on a full page with a 1 1/4 inch offset.

The Busy Manager's

Guide

to the

WIMS

Written and Prepared by:

Capt Thomas E. Lavery

TABLE OF CONTENTS

WIMS i

WIMS ii

How to Use This Guide

This WIMS User's Guide has been prepared
from requests by other users like
yourselves who had specific and general
questions on certain procedures in the
WIMS. This is all about trying to answer
those questions and problems and to
provide answers and direction, not to
teach details.

The guide is broken into two parts. The
first section is a general instruction
and information guide which is suitable
for all users but which contains more
detailed information than an experienced
user may need or want.

The second part is directed at the
experienced user and provides minimal
instruction but gives all important data
in concise form.

It is hoped that this format will allow
you to find information as quickly as
you can while also trying to provide the
depth of detail which you need!

As you use this guide please make your
own notes and changes. Extra pages are
provided and additional pages can be
easily added. Your comments will help
you to remember and use the WIMS better.

What is a WIMS Anyway

The Work Information Management System
(WIMS) is the newest USAF Civil
Engineering management tool. It is a
system designed to provide civil
engineers at all levels with the
information and tools they need to do
their jobs most effectively. The WIMS
runs on a WANG corporation VS-100
minicomputer.

The real magic about the WIMS is that
managers don't need to be computer
programmers to use the system to their
full advantage. WIMS is designed and
continuously modified to give managers
what they need. However, if you are so
motivated that you wish to expand your
skills and write your personal programs
or special reports, you may do that too.
. . and its easy to do!

Your computer screen can provide tools
to make your job quicker, easier, and
more accurate. All you do is give the
WIMS a chance. You will have to learn a
little (not much though) before you
will see the great things you've
heretofore missed. WIMS is like any
other special tool: It takes a little
learning and you've got to use it. I
think after a short time, you'll see the
power WIMS offers and want to use it!

WIMS 2   WIMS   .

Before You Start...

Many people are timid with computers
fearing that they will somehow "blowup"
the system. WIMS won't let you do that.
You cannot physically damage any of the
installed equipment by using it.
However, you may accidentally erase or
misplace some of the data which is
stored in the computer's memory. Just be
sure to carefully read instruction
screens. As you become more familiar
with the computer, you will begin to
whiz up and down through the menus.
Trust Me!

Uniformity of PF Keys

In this guide, PF Keys are sometimes
referred to by exact number AND title or
function which is being called. Each
WIMS system will not be the same due to
local and MAJCOM modifications.
Therefore, you as the user may need to
annotate changes so that this guide fits
your system. In general, some PF Keys
are somewhat constant:

      PF (4)   Previous Page
      PF (5)   Next Page
      PF (13) Information
      PF (15) Print
      PF (16) EXIT
      PF (32) EXIT and QUIT System

Others may also be constant on your
system. Annotate them for reference.

                WIMS 3   Before You Start

System Requirements

In order to learn to use the extended
WIMS functions you need access to them.
As a minimum, you should have on your
menu system somewhere, access to:

> Report
> Create
> EZFormat
> Inquiry
> File Display
> Editor or REDitor

These utility functions are the heart of
helping you to do you job more
creatively.

See your system administrator to get
access to these utilities. You might
suggest he give you the menu screen
entitled "DEMOFUNC" as your initial
screen. It contains all of the really
important procedures.

Each WIMS installation is different so
your system may not have these now. Go
get them! Don't take No for an answer.
Excplain that you need to have these to
become a super WIMS user. If you explain
how you will do the work and not ask the
administrator to write your reports,
he'll see the light.

WIMS 4   System Reqmnts

1. A Quick Tour of the WIMS

This guide assumes some competence on your part. The WIMS terminal should not be new to you, but it may still be a stranger in your office.

This guide will help you learn how to use your WIMS computer better. It offers some advice and instruction for both the novice and the expert.

Each WIMS system will differ slightly from another. This is due to the flexible nature of the system; it's designed to change to better fit the local needs. Therefore, this guide cannot exactly tell you to push this key to get this result, but it can lead you to the right direction and instructions.

Let's get started. . .

Turn on your terminal and logon the system. Your first screen will offer a wide variety of options. I don't know what your favorite is so select the WIMS function and press the appropriate PF Key.

The next screen gives several options for which subsystem of the WIMS you wish to enter from the Base Commander's menu to the other Civil Engineering branches.

Select the DEM branch.

Again your next screen displays a series of optional areas to enter.
(If you think this is like a "maze" game you are right).

<center>WIMS 5   Quick Tour</center>

Select the "Chief of Operations" choice.

From this screen you have new options where you can actually run office functions, or look at Job Order summaries or other tracking and reporting requirements. If you have no tracking operations check with your system administrator to load some. Many are available and the administrator can help load them onto your menus for direct use.

Next, select the DEMR area.

Your screen will now show the functions open to the Requirements area. You may want to try some out to see what they are.

Get back to your top menu by pressing PF Key 16 several times until you get back to a menu you want to look at more. Note that IF you press PF Key 32(Shifted PF [16]), you will logoff or exit the entire system. This can be handy, or it can take you by surprise!

This guide cannot list all the contents of all the menus for two reasons. First, there are too many menus, and second, the menus are designed to change. This guide cannot accommodate all the possible changes in the USAF.

WIMS 6   Quick Tour

Note: If you cannot access the menus
from other CE branches consider asking
your system admninistrator to add that
to the WIMS at your base. Not all WIMS
are set up the same. You should have
access to the other branch menus. You
should know what's going on in the
other branches. As a manager, you need
to be aware of what's going on outside
of your world. Tell your administrator
you want that kind of access.

TIP: Periodically scan other menus in
branches outside of your own. This will
give you a chance to see changes that
your peers have made to their particular
part of the WIMS, and will also
familiarize you with other functions and
procedures which are available on your
computer.

As the manager of your section, you will
set the example to your subordinates. If
you never use the WIMS or try to expand
its usefulness to your section, your
subordinates won't either. Ask them to
write special reports which you need
from their specialties. Get them
involved. But to do this, you must let
them know you want to use those reports
in a meaningful manner.

WIMS is a powerful tool for even the
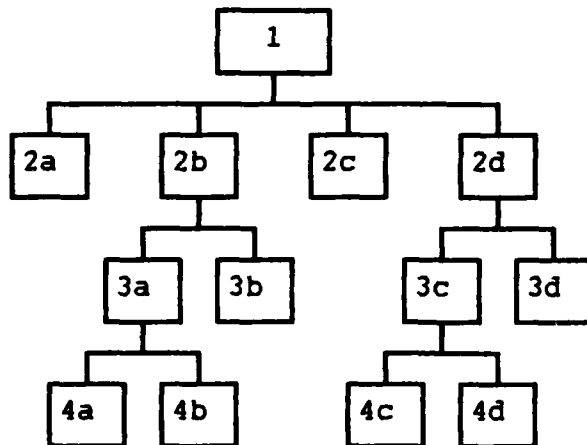novice user and it gets better as you
use it more!

2. Using Menus

The WIMS uses an extensive Menu system to help you get around the system. To some experienced users they seem to be a headache while to most users, menus are a simple method to perform some procedure.

There are some simple rules you really must follow.

1. Read the menu screens thoroughly. Often the procedure you want is labeled differently than you might think.

2. Press the correct key. If you are selecting a procedure to start, you will usually press a PF Key. If you are in the Word Processor or another program, you may need to press the RETURN key, the EXECUTE key, or the CANCEL key.

3. At some point you may need to use the SPACEBAR to advance the cursor, or the TAB key, or the ARROW keys. If one doesn't work, try another. Commonly use the tab key to shift across the screen, the arrow keys for up and down. The spacebar is used in some word processing functions.

The most common two complaints seem to be that the wording on some screens is vague, and that it is very time consuming to have to move up and down through this strictly hierarchical system.

To illustrate how you must move
around, consider this figure which
represents the structure of the menu
system.

```
                    ┌─────┐
                    │  1  │
                    └──┬──┘
        ┌───────────┬──┴───────┬───────────┐
     ┌──┴──┐    ┌───┴─┐    ┌───┴─┐     ┌────┴┐
     │ 2a  │    │ 2b  │    │ 2c  │     │ 2d  │
     └─────┘    └──┬──┘    └─────┘     └──┬──┘
              ┌────┴───┐            ┌─────┴───┐
           ┌──┴──┐ ┌───┴─┐      ┌───┴─┐  ┌────┴┐
           │ 3a  │ │ 3b  │      │ 3c  │  │ 3d  │
           └──┬──┘ └─────┘      └──┬──┘  └─────┘
          ┌───┴───┐             ┌──┴────┐
       ┌──┴──┐ ┌──┴──┐       ┌──┴──┐ ┌──┴──┐
       │ 4a  │ │ 4b  │       │ 4c  │ │ 4d  │
       └─────┘ └─────┘       └─────┘ └─────┘
```

Representation of the WIMS Menu system

You can visualize these blocks as the
various menu screens that you go through
as you select progressive new screens.
As you go lower into the hierarchy you
must travel the same distance back up to
start going down a new path. There are
no shortcuts. To move from screen 4a to
2a takes 4 distinct steps. You can't
jump from one path to the next.

However, there are some creative ways to
solve or at least abate these problems.
You will find these methods in this
guide in the Custom Menu tutorial. It's
a simple thing to change the words on
menu screens.You may add an extra PF Key
to allow you to jump back to the top
menu from any other, similar to the Exit
PF key 16 already there!

WIMS 9   Menus

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3. HELP!!!

If you get stuck, here are some tips to try.

Important Note: Are you stuck or is the computer processing a long program for you. If there is no blinking cursor on the screen, the computer may be working. If after several (3-7 minutes for looong programs) call the system administrator. Turning off the terminal won't take you off the system, it just messes the system up worse!

Note: If you are stuck in a regular program on the WIMS, call your System Administrator and describe the situation. He can help to locate and isolate the problem to avoid future occurrences.

1. Read the screen menu. Does it tell you how to go back, or what to do if done? Try those.

2. At this point, if you're still stuck, read the menu and press a key. Try any key that may take you somewhere else where the computer can help you out.

3. Are you in the Word Processing or another WANG peripheral function? Often you may need to press the EXECUTE key to start an action instead of the more familiar ENTER key.

4. Try pressing the CANCEL key. This key is used in many WANG functions and may work if you are in a peripheral function.

WIMS 10   Help

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5. **Caution:** Read carefully before
proceeding. This may cause lost data or
damage to existing data files. If you
are running a program which accesses
files other than your own personal
files, consider avoiding this option.

If you have the **HELP** key functioning,
try this next.

Press the **HELP** key. It will take you
temporarily out of your operation and
let you return to the calling program or
escape completely. Be careful here. You
can select the option to quit and exit
the current program. Read the screen and
select your choice. Try "Return to
Calling Program" if in doubt.

Tip: Try using the Help key before you
get stuck. It won't always work for all
menus or programs but it will for most.
If your help key never works, see your
system administrator. He may have
"turned-off" this function. Ask him to
turn it on!

Still stuck? Try pressing PF 16.
Remember, you really can't damage the
computer. At the worst you may make some
unwanted changes to one of your personal
files, but generally the computer has
built-in safety devices.

WIMS 11   Help

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4. Introduction to Advanced Techniques

Reports:
The REPORT generating function is one of the best reasons for the WIMS yet may be one of the least used. This function allows you to either customize an existing report or make an entirely new report. See the tutorial section for a quick lesson how to use this in your own job.

Creating a Database:
You can also create your own database. There may be specific application you need to save large amounts of information for later analysis or other use. A database is the perfect tool for those types of problems rather than to use a manual system which can rapidly become tedious and lead to errors. See the tutorial section for a quick lesson on creating your special database. Once established, you can extract specific information in your own format using the Report function previously mentioned.

Programming the Computer:
The WIMS is designed so you do not have to learn to be a computer programmer! However, if you are adventurous and wish to write your own computer program, you certainly may. The WIMS allows you to use several different "languages" to encode your program and can even help you write it correctly. Refer to the computer language section in the Advanced Techniques section for additional information.

5. Applications Programs

20/20 Spreadsheet

The spreadsheet loaded on the WIMS computer system is called 20/20. It is a commercial product which can be of great value and use to many managers who need to visually look at data and see the results of changing values. It is also used in the Financial Management function for budgetting and balancing purposes. It is similar to LOTUS 1-2-3 (Another commercial spreadsheet) but uses slightly different commands.

Books:

WANG Corporation. WANG 20/20 User's Guide. WANG Laboratories, Lowell, MA, Dec 1985.
        - WANG manual for 20/20 Spreadsheet program.

Additional training for the 20/20 Spreadsheet Program is available from

        Access Technologies
        6 Pleasant St.
        South Natick, MA 01760

Access Technologies offers a videotape lesson presentation which covers most of the 20/20 functions and is a good teaching device for the novice computer user. It has 3 - VHS format tapes and has workbooks available.

The AFIT School of Civil Engineering and Services at Wright-Patterson AFB Ohio has a set of these tapes available for loan.

<div align="center">

WIMS 13   Applications

</div>

Keyboard Template

A keyboard template is available from
WANG for 20/20. It is part # 615-2955.
Your system administrator can help you
get it. A blank template part # 615-2402
can be adapted to that use.

To summarize the template:

PF Key	Function
1	Recalc
2	Point To
3	Home
4	End
5	Cell Left
6	Cell Right
7	Cell Up
8	Cell Down
9	Page Left
10	Page Right
11	Page Up
12	Page Down
13	HELP
14	Do/Start CommandFile
15	Continue CommandFile
16	Backout

These keys will become clearer as your
proficiency with 20/20 increases.

WIMS 14   Applications

WANG Word Processing, Office

The WANG/WIMS system also has two other functions which you will want to get capable with: The word processing function and WANG Office.

The word processing is just what it says: A very good word processor which you can use to type your letters and other correspondence. The magic here is its flexibility and relative ease of use (Relative because nothing is easy until you learn to use it. The WANG word processor is quick to learn).

WANG Office is a useful tool for you to communicate with others on the WIMS system. It has electronic mail functions, ways to send out memos to all or partial system users and a host of other features which can make your job as a manager simpler and quicker such as time management and task management.

This guide will not address these functions as there are standard tutorials and publications available for them. Check with your system administrator for manuals. You may want to check with your DEA branch. They are often the focal point for word processing and are usually the most expert with that system.

WIMS   15   Word Processor

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6. Other Sources of Information

These reference items may be of use to you for particular applications. Most of them cover WANG peripheral functions and do not directly address WIMS problems.

Documents

Department of the Air Force. Services Information Management System (SIMS) User's Handbook. HQ AFESC, Tyndall AFB, FL, 1987.
      - An overview of how the SIMS computer fits into the unit. SIMS is the Services equivalent to WIMS.

WANG Corporation. Word Processing Quick Reference Guide. WANG Laboratories, Lowell, MA, 1983.
      - An 8 x 6 inch guide for the somewhat experienced user.

WANG Professional Computer Series. The Wang Professional Computer User's Quick Reference Guide. WANG Laboratories, Lowell, MA, 1985.
      - A 8 x 4 inch fold-out reference card which contains many commands with options and other information.

-----. The WANG Professional Computer DOS Command Processor Quick Reference Guide. WANG Laboratories, Lowell, MA, 1985.
      - An 8 x 4 inch fold-out reference card.

-----. BASIC Language Quick Reference
Guide. WANG Laboratories, Lowell, MA,
1985.
    - An 8 x 4 inch fold-out reference
card.

WANG Corporation. VS Color Utilities
User's Guide. WANG Laboratories, Lowell,
MA, Jan 1985.
    - Help for the Model 4245 Color
Workstation.

-----. WANG 20/20 User's Guide. WANG
Laboratories, Lowell, MA, Dec 1985.
    - WANG manual for 20/20 Spreadsheet
program.

Additional training for the 20/20
Spreadsheet Program is available from

        Access Technologies
        6 Pleasant St.
        South Natick, MA 01760
        Tel # 617-655-9191

Access Technologies offers a videotape
lesson presentation which covers most of
the 20/20 functions and is a good
teaching device for the novice computer
user. It has 3 - VHS format tapes and
has workbooks available for students'
use.

WIMS 17   Information

Graphics

The 3480th Civil Engineering Squadron at Goodfellow AFB Texas has produced a very good graphics manual. Titled _VS Graphics Handbook_, it is a good tutorial on using the WANG VS-100 graphics to produce common graphs and charts which a CE squadron might use for a variety of reports and briefings. It covers bar charts, pie charts, and a variety of other useful purposes.

Other

The "little z" library in the word processing section of your WIMS has many descriptions, lists, and tutorials that you may want to investigate such as _Functional User's Guides_ and others.

If you have problems which neither you nor your administrator can solve, there are many knowledgeable people to help (They're not experts, just really good!).
First try your MAJCOM WIMS advisors.
Some of them are:

	Autovon Phone #
HQ AFLC	787-6939,2669
HQ MAC	638-4008
HQ SAC	271-4544
HQ TAC	432-3151,5502
AFIT SOCES	785-4552

Air Force Engineering and Services Center (AFESC) has primary responsibility for the WIMS.

AFESC/SIW   AV 523-6001,6112

WIMS 18   Information

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7. Tutorials

This section contains several tutorials which will be examples to you for specific tasks. They will provide you with minimum products which are not intended to be particularly useful but rather to be examples to the steps and rationale for certain steps.

Tutorials are contained for:

    Reports
    Menus
    Locating Files

WIMS 19   Tutorials

Report Tutorial

Objective: Create a Report which
provides a report of all open Job Orders
which lists type, number, facility, and
a brief description.

Task 1. Find the files which contain the
information about Job Orders.

Files in WIMS are organized by Branches.
The file naming convention tells us that
DEM-type files will have a starting
letter character of M. Start by doing a
library search looking for M? files.(The
? is a wildcard character).

From the Main WIMS menu, look for a
function "Find File". On my menu it was
PF Key 3. For the command line,

    File_____   Lib_____   Vol_____

enter,

    File ?   Lib M?   Vol ?

The computer will search for all files
with any filename in library MXXX in any
volume. You should scan the list you
will see on the screen. A good guess for
the job order information looks like
MJOB. Note there is a control file -CTL
and a data file -DATA. Both are needed.
Write them down.

Now return to the first WIMS menu by
pressing the PF16 key. Look for
the File Display function. On my
system it is PF Key 4. This will let
you look at some actual data.

<div align="center">WIMS 20   Report Tutorial</div>

At the prompt, enter.. .

File MJOB Library MJOBCTL   VOL PGM001

The next screen explains the options in
the file display function. Press PF 1.
This displays the CONTROL file for the
Job Order file section. It is how the
computer understands what is stored and
in what order.
Exit this file by pressing PF 16 -2
times.

Again using File Display look at

File MJOB Lib MJOBDATA   Vol DAT003

Now you know where the information about
Job Orders is stored and you know the
names of the Control and Data files. To
write the report, you will need to know
the names of the data you want. These
are called Field names. From this menu
you may want to print the -CTL file for
reference. On my system this was found
on PF (15).

Task 2: Layout.
       At this point do a paper layout of
how you want your report formatted. For
now we'll want a report that shows: The
work class, the Job Order number, the
Facility number, and a Description.

From the File Display of MJOBCTL you
identify the appropriate fields:

Our Name	Field Name
Work Class	TYPE-SVC
J/O Number	JOBORDER
Facility Num	FAC
Description	WK-DESC1

                 WIMS 21   Report Tutorial

You will need these field names to make
the report.

For your sketch layout, I suggest your
example report be:

Column 3   Work Class (This will be
                  E,U, or R)
Column 8-12   Job Order Number
Column 15-20   Facility Number
Column 23-60   Description

With this paper layout, go to the REPORT
utility procedure.

Task 3: Create Your Report.
     Call the Report function. At the
first screen, you want to Create a new
report PF (2)

A series of screens will prompt for
information.
     Report ID - Any valid name
     Additional Data File - NO
     User Exit Program - NO

Press Enter and continue

Primary File = MJOB
in Library   = MJOBDATA
on Volume   = DAT003 (Your addresses
                          may differ)

Press Enter to continue
Next Screen:
Primary File Field Selection
Place an "X" in the blocks for TYPE-SVC
                               JOBORDER
                               FAC
                               WK-DESC1

Enter

                    WIMS 22   Report Tutorial

You don't need to define any new fields.

Screen Report Definition Options

You need to review these for your own
desires. Try them out! Or just . . .

Go to Field Sequence next PF (5)

In the spaces to the left of the Field
ID, enter the desired sequence...

Type-SVC 1 01   JOBORDER 1 02
FAC   1 03   WK-DESC1 1 04

Enter to continue

You need to identify the field sizes
next. This tells the computer how big a
space to use on your report. If it's not
large enough, your information is
truncated. You can find this information
on a listing of the control fields you
selected.

TYPESVC   1
JOBORDER   5
FAC   5
WK-DESC1   65

Enter to continue

At this point your report is ready,
although a little rough. The next
screens allow you to polish, leave
spaces and lines, add subtotals and
other extras. Use PF (16) Exit from this
phase.

Go back to the first menu PF (1)

WIMS 23   Report Tutorial

Task 4: Print the Report.

Select Print the Report: PF (4)
Output the report to the DISPLAY first
to check for gross errors.
If everything went right....You have a
report which looks something like this.

NOTE: This step may take some time for a
large number of Job Orders . . .

Report Date xx/xx/xx   Some Title

TYPE-SVC	JOBORDER	FAC	WK-DESC1
E	83027	01384	Do This
R	82043	00023	Do That
etc.			
etc.			

Yours may be different. Change it,
modify it, destroy it if necessary.
Talk to other users or your System
Administrator for tips.

WIMS 24   Report Tutorial

How to Customize Your Menu Screens

You can modify your menu screens by
adding, deleting entries or changing the
verbiage to make it more clear. However,
the system administrator needs to know
what you want to do. You may want to
change the standard screens for your
entire system or just for yourself. The
procedures differ slightly.

If you already have personal menu
screens which have been developed for
you by the administrator you have a
simple task to change them.
Press PF (31) to customize the menu.
Follow the simple instructions.

If you have personal menus, You are
responsible to update them as the WIMS
software changes and evolves. New
software may change the names of
procedures or other information. Your
personal menu will try to call the old
procedure and you may get an error.
Don't expect the administrator to fix
this. Your personal screens are yours!

On that note, personal menus and screens
are an option which shouldn't be
discounted. If they make your work
simpler or better, use them.

WIMS 25   Custom Screens

Clever Idea

You can add a simple help to your menus
with approval of your administrator.

If you frequently want to jump from a
lower level menu back up to your top
menu without going backwards through all
previous screens, a procedure can be added
to the system which will allow an unused
PF key to perform that jump function.

You will "program" that spare PF Key to
tell the computer to jump back to a
predetermined menu and to work from
there.

You will add a PF Key Function
to each menu screen allowing you to
return to an original start point,
perhaps to the WANG Office menu or to
the WIMS welcome screen.

As mentioned earlier, you may want to
get a broader menu screen as your
initial menu such as menu "DEMOFUNC"
which gives you lots of flexibility to
move around the WIMS system.

WIMS 26   Custom Screens

Where's MY Files

After using the WIMS for some time and
after you've developed some programs or
data files of your own, you may forget
the name of some important file. If they
are small you can re-enter the file. But
that's inconvenient and inefficient...
and it's easy to find your files IF you
have followed some naming convention.
(Check with your system administrator for
tips on local naming conventions.)

Tip: Why not use some unforgettable
short name to identify your files.
Although, for many functions, the
computer names them for you.

Use the File Display function.(On my
machine its PF 10 from the main menu.)
The screen will display:

     File_____   Lib_____   Vol_____

You fill in any information that you
know and fill the rest with the wild
card symbol [?].
For my file I may have names files with
TEL as the first 3 letters of the file
name. I would enter

     File **TEL?**   Lib ?____   Vol ?____

The computer will search for all files
with a file name that is **TELX** where X
can be any character or combination of
characters.

You could fill in all 3 blanks with the wildcard [?] but you would get a huge list of every file in the computer. Eventually you might find what you want...

TIP: Consider making a Word Processing document that lists all the names and a brief description of your files. Update it every time you use a file. You'll have a permanent record for reference. Why not make some notes in the User's Reference pages in this book. That's why they're there!!!

If you're looking for an information file that you did not make, consider first the location of the file: What Civil Engineering branch uses that information the most? WIMS uses a convention to name files. A file name will begin with the last letter of the branch from which it comes.

For example, a work order file is most likely from the DEM branch. Therefore, the file name will start with M. Using wildcards, search for files which start with M. (Use M?). If you just did this, you note there are lots of these files. You need to isolate them more. If you can, try to figure out some more identification for file name or whether or not you want a data file or control file.

TIP: Practice really helps. Don't expect instant success. You may have to do a broad search. It takes more time but you can eventually find the file you want.

WIMS 28   Files

8. User's Personal Reference

This section has been placed here for your personal notes, comments, and names of important files you may use. It is meant to be filled by you with no particular format in mind. Use this section to be your notepad and reminder!

WIMS 29   Personal Reference

WIMS 30   Personal Reference

Advanced Techniques

This section has information and
advice for the WIMS user who has some
experience and has developed some
adeptness at moving around the WIMS
system. It is not very advanced or
difficult but does require some
familiarity with the system. This
information is not required for every
user but has been requested by several
and can be of use to all WIMS users.

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9. Power Users

      This section will give you
information on how to start using and
applying more of the WIMS capabilities.
Get used to using the special commands
and procedures and use them to manage
better. Make your own reports and
require them from your section leaders.
These special abilities will allow you
to see information in whatever format
you like best.

32

Reports:

Making new reports is a straightforward task which may be easy and quick or may be time consuming. If you are customizing a standard report or are using existing data then the task is relatively simple. Using the Report function you enter the names of the files you will be accessing and the field names of the data you wish to use. The report generator will prompt you for layout specifics and will then generate the required computer code. Your report is done!!

If however, you want to create a completely new report with a new or separate data file, your task is more lengthy but not much more complex. Again, the WIMS will prompt you for information it needs to build the data file, enter the data, then build the actual report. Done!

TIP: Whenever possible, use existing data files. Save yourself the work!

When you contemplate a new report, the best advice is to sketch out how you want your report to look on the page, including and annotating how many characters a certain entry will be, whether it is a numeric or alphabetic field, minimum and maximum sizes, and in what order to sort the information. This sketch will make your task simpler.

SUMMARY

To create a completely new report (one which doesn't use an existing database), you must:

    1. Create a CONTROL File, which defines for the computer all the specifics about the information you want to enter and the correct format.

    2. ENTER the Data.

    3. CREATE the Report Definition. This directs the computer how to print the report and where to get the information from your data file.

To create a report from an existing data file, you only need to define the report itself.

To create the Control File, from your WIMS menu find the procedure CONTROL and select it. The screens will now prompt you for information you should have from your sketch.

The next step is to enter the data. Find the DATAENTRY procedure and use it. After all data has been entered,

Run the procedure REPORT to define the report itself. Again, use your sketch to help you.

Once you have successfully completed your report, run it from the report menu to insure it is correct and make changes as needed. If this is your first attempt at report writing, try a simple one first (See the Tutorial).

<p align="center">WIMS 34   Reports</p>

Once your report is finalized and you
are happy with the outputs, you may want
to automate it and add it to your menu.
As it stands you must run through
several steps to manually run that new
report.

First, check with your system
administrator to rename the report
correctly and to place it in the proper
volume and library. Next you would run
the procedure PROCFORM. This will
automate your report and provides you
with a directly executable procedure.
This can then be added to your menu
selections. See your administrator for
details or help to do this.

WIMS 35   **Reports**

Using CREATE or Making Your Own Database

What is a database? It is a collection
of information you wish to keep in the
computer. For example, if you are
organizing the Base Combined Federal
Campaign (CFC) drive you might want a
list of all the key workers helping you.
You could store that information and
later generate a series of reports from
that stored data such as a list of names
only, a list of names and squadrons, or
what ever combinations you might need.
You could just list that information in
a word-processing document, but the real
power is that using database storage,
you can later write reports which can
extract, sort, and create statistics for
you.

Getting Started

Use the **CREATE** procedure to start, or if
you wish to build the database, fill it
with information, and then generate
reports use the **EZFORMAT** procedure.

The menus are straightforward to follow.
First "Create" the control file. This
file tells the computer what names you
are assigning to certain information (
like "LastName") and some specifics
about that piece of information (like is
it alpha- or numeric characters). Think
of your database control file as a card
with empty positions you will later fill
with data. The computer will fill these
spaces(Called FIELDS) with the data
that you enter later. You also need to
tell the computer how many cɦɪracters
the FIELD will be. Remember to write
down the names you are using. . .

WIMS 36   Custom Databases

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After you have created the Control File
you can enter your data into it. Use the
ENTER procedure (or continue in the
EZFORMAT procedure).

You can use the "LIST" procedure to see
the data you have entered. If you are
past that screen you can use the **FILE
DISPLAY** procedure . . .

Now you can write a **REPORT** to retrieve
any or all of that data you have
carefully saved away.

WIMS 37   Custom Databases

Inquiry Function

The Inquiry function is really useful
when you want a partial list of data
which is stored in a known data file.

You need to know:

    1. The names of the data and control
    files, libraries, and volumes.

    2. The Field names of the data you
    wish to extract.

    3. The way you wish to extract only
    a portion of the data file.

For example, you may want a listing of
Job Orders for a particular facility.
You would need to know the correct
files, in this case
    MJOB   MJOBCTL   PGM001 and
    MJOB   MJOBDAT   DAT003

Your files may be slightly different
addressed.

The fields I might need then are the
    Facility Number   FAC
    J/O Number   JOBORDER

Now I can get a quick list WITHOUT
writing a complete report!

Call the INQUIRY function from your
keyboard and give it the name of the
data file you wish to use.

If you don't know the field names
available to you, PF [15] will display
them.

After you have correctly entered the
file information, the computer needs to
know what information you want. You tell
it in quasai-english sentences what to
do. PF [14] explains.
For example,

List JOBORDER when FAC = `30154'

This tells the computer to list all the
fields names JOBORDER when the
correspopnding facility number is 30154.
I found I needed to include the ` '
marks or the computer didn't understand
me!

What I got was a list of all job order
numbers for that building. That's what I
wanted.

You can have the computer select any
records from your data file by telling
it the parameters to select them with.

When you're finished you can change your
selection criteria around and try again
or you can also continue on and the WIMS
will help you to create a REPORT to keep
this special list as a report you can
run!

Inquiry is a powerful tool for you to
get quick answers with a minimum of
work. I had some initial syntax errors
talking to the machine, but soon (15
minutes) got it to work fine. Try it
out. You can make it work!

WIMS 39   Inquiry

Utilities

In the Word Processing Little z library
is a listing of the many utilities which
are available to you on the WANG/WIMS.
There are USERAIDS, which are in the
WANG VS-100 system, and there are
USAFAIDS which are utilities developed
by and for US Air Force WIMS systems.
Many have good descriptions of what
these utilities can do for you. I
suggest you look at this file when you
need to convert any programs or files,
or if you are an experienced user and
are completely familiar with the routine
system operations and want some
shortcuts.

There are too many to discuss here. A
brief look will show you the wide
variety of utilities which are available
which range from file repair programs to
a utility which automatically adjusts
for daylight savings time or word
processing helps to convert screens to
documents and vice-versa.

These aids are continually being written
and distributed by different agencies.
Your system administrator can help you
find information.

Many of the utilities are similar to
personal computer options. Many options
are available for copying files, finding
strings or names, and general help
facilities.

My best advice is to look around the
listings in the little z library and try
some out!

WIMS 40   Utilities

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NOTE:

IF you are writing a special program in either the Procedural language or one of the other common computer codes, check for help here. There are many conversion routines and programs which will help you to write your program and help you code it correctly!
Try:

EZFORMAT: Procedure to help you build and fill a database, write reports, and create new screens to use your database and reports.

EZPRINT: Develop formats to print forms.

FILEDISP: Displays a specific file.

FILEPARM: Print file descriptions. Single files or libraries.

GENCTL: Creates CONTROL files from COBOL source.

LIST: Display file descriptions for a selected library.

MENUGEN: Create a COBOL menu program from a screen image.

PAUSE: Allow user to print a message to the screen.

PROCFORM: Generates a procedure language program from a program written in another language.

PRT2SAVE: Converts a screen saved
from the help menu via PF (14 or 15) to
a file for the word processor.

RPTGEN: Create or modify an
existing report definition.

SCRAMBLE: Allows user to encode
files.

SORTFILE: Lists info on files by
USERID.

WIMS 42   Utilities

Access Rights

If you have ever been told by a WIMS
screen message that you can't access a
file you need, you don't have sufficient
access privilege. This is similar to a
security clearance. Perhaps you can read
files but cannot make changes to them.
Same problem!

Your system administrator can help you
gain additional access to files and
other procedures (such as the HELP
function). However, he will do this only
when you have a real need and have
displayed some ability and adeptness
with the WIMS. Ask him for expanded
privileges. He can explain what is
available and tell you what he will
allow.

Your administrator can give you the
needed access only if you ask for it and
can logically justify it. The
administrator is not trying to be an
information czar and control everyone,
but he must insure that the integrity of
the computer and that information files
will not be accidentally altered.

Other access which you may need deals
with the types of menus you have access
to and which procedures you can run.

Best advice: See the administrator and
ask!

WIMS 43   Access Rights

10. Computer Languages

Most procedures and reports which you
need are already on the WIMS computer.
This section is not meant to tell you to
write your own programs. Rather it is
additional information for those few
individuals who wish to do so.

The WIMS is designed so that you do not
have to know or write any computer
coding. However, the WIMS is also
flexible enough to allow you to do so if
you need a special application.

WIMS has the capacity to understand
computer programs in several languages.
Most of the WIMS software is written in
a form of COBOL called procedural
language. You can write your
applications programs in COBOL and WIMS
will understand it. WIMS also can
understand other popular computer
languages including:
    BASIC
    FORTRAN
    RPG II

Others may be available on your
system. Check with your system
administrator on availability but don't
expect the administrator to write your
personal applications. That's not his
job!!

Running a BASIC Program

(This sections assumes that you are familiar with BASIC programming)

BASIC is a popular and simple language to use and learn. Running a BASIC program on the WIMS is straightforward.

On your computer, you need to find the REDITOR program. It may be on a secondary menu under Utilities. Call up the REDITOR function. At the next screen press the PF key for Display, (on my machine it is PF 1).

At this point, type in your program. This works fine for a short program, but for a lengthy program will be time consuming. If you have the program on a floppy disk, check with the system administrator to see if he has the capability to download it into the system directly. Good Luck!

Once the program is entered, follow the menu directions. (PF 1) to save the program. Give it a logical name. Follow naming conventions. Write down the name. The WIMS will develop an object file which will have the extension OBJ. Exit with (PF 16).

To run the program from another menu, find the Run Program function. (On my machine it was PF 5.) Enter the File Name, Library, and Volume and it runs.

Simple, wasn't it ?

WANG BASIC is slightly different from
some other forms of BASIC. See the WANG
BASIC Quick Reference Card or Handbook.
See your administrator for help finding
these.

**Running a FORTRAN, RPG II or other
program.**

These programs are also written from the
REDITOR function and identified further.
Again, the WANG language may be slightly
different from other FORTRAN languages.
Check a Quick Reference card or User's
Guide for further help.

Whatever language you run, the WANG
computer takes your program, runs it
through a translator so it can
understand it (called a compiler), and
runs the program.

WIMS 46   Languages

11. User's Reference

Use this area for your own personal
notes, file names, programs, and memory
joggers.

WIMS 48   User's Reference

Terms

WIMS: Work Information Management System. This is the Air Force written applications program which is run on the WANG VS-100 computer.

System Administrator: The designated individual in your unit who operates and maintains the WIMS system including software, hardware, and who runs the WIMS <-> BEAMS interface reports. May be referred to as the Administrator.

Terminal: The combination of video screen and keyboard which you use to communicate with the WIMS.

PF Keys: The rectangular key positioned across the top of the keyboard. There are 16 keys, but when used in combination with the Shift key, make a total of 32 possible PF Keys. These are called from menus and give directions to the computer based on which key you select and depress.

Spreadsheet: A mathematical management tool which allows the user to enter numbers and mathematical instructions which it will then complete automatically, such as performing a balance sheet. The WANG/WIMS system has 20/20 spreadsheet on it for use. It is a very powerful tool for anyone who needs to manipulate numbers.

File Addressing:

File: Name of a program, set of data, or set of instructions. Think of a file as the contents of a file folder in a drawer.

Library: A higher designation for a file indicating it's location. Think of it as a drawer in a filing cabinet containing many files.

Volume: The highest address designator for files. Think of it as one in a series of filing cabinets.

Menu or Screen: The display on the video terminal which displays information and allows you to select a program or procedure using the PF Keys, or to enter some information.

Procedure: A program which is contained in the WIMS and is ready to run normally by selecting with a PF Key. These are normally written in the WIMS procedural language, a form of COBOL.

Report: A special display of information which is contained in the WIMS data storage section. A report selects certain pieces of information, processes them, and then displays then in a predesignated format. WIMS has many reports built into it, but you may generate your own custom reports easily.

WIMS 50   Terms

Database: The term generally applied to a structured system which the computer uses to store data and information. The WIMS has a series of databases from which information can be extracted and a variety of reports made for management assistance. The WIMS also allows you to create your own databases using the create command procedure.

Access Rights: A security system for the WIMS. Not everyone needs access to every part of the computer, so most people are restricted. The restrictions can be complete, that is, you cannot ever get to a particular program or file. The access restriction can also be less stringent such as "Read Only" where you can see what is in a file but cannot change or modify it. If you are hampered by this, see the administrator for possible upgrade.

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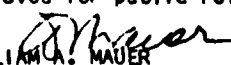28. Weiss, Edmond H. How to Write a Usable User Manual. Philadelphia: ISI Press, 1985.

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ABSTRACT

This study investigated the need for, and produced a manager-oriented user's guide for the USAF Civil Engineering Work Information Management System (WIMS) computer. This guide is not meant to be a teaching device but is a reference book which contains information to help a manager better use the WIMS as a management tool.

The contents of this guide are directly related to the WIMS functions which civil engineering managers needed or wanted to use the most. A survey of those managers was made to determine their desires for such a manual and what specific data it should contain. A random sample of 24 managers from USAF major commands was completed and data gathered from these and other expert WIMS users.

Once the data was gathered, the final step was to compile the user's guide. The data was grouped and answers and solutions to the problems presented by the sample group were then formulated and tested. All major areas of interest indicated by the sample group were answered and several additional areas were added to clarify and help WIMS users.

The final guide was tested and refined several times by the author in conjunction with other WIMS users and experts. A trial test was run to establish the usefulness of the guide with a small group of AFIT students.

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